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TO:	**Examiner Le H. Luu**	FAX #:	**703-872-9306**
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COMMENTS:

U.S. Application Serial No. 09/466,993
Applicant: Walter A. Hubis
Title: Storage Network and Method for Storage Network Device Mapping
Attorney Docket No. A-67525/RMA

Dear Examiner Luu:

Thank you for your attempt to contact me by telephone today. Attached is a proposed draft of Amendment After Final for your review in connection with the above-referenced patent application. I will attempt to reach you by telephone tomorrow to discuss this amendment after final.

R. Michael Ananian, Reg. No. 35,050

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REFERENCE # A-67525/RMA

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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In re application of:	Examiner: LUU, Le Hien
HUBIS, Walter A.	Group Art Unit: 2141
Serial No. 09/466,993	Confirmation No.: 1822
Filed: December 10, 1999	Date: 24 March 2004
For: STORAGE NETWORK AND METHOD FOR STORAGE NETWORK DEVICE MAPPING	Our File No.: A-67525/RMA (125196-43)

CERTIFICATE OF MAILING

I hereby certify that this correspondence, including listed enclosures, is being deposited with the Untied States Postal Service as First Class Mail in an envelope addressed to: Commissioner for Patents, Alexandria, VA 22313-1450

Date: _____

Signature _____

PROPOSED INFORMAL

AMENDMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This response is submitted in reply to the Office Action mailed November 26, 2003 for the above-identified application and includes a Petition for 1-Month Extension of time to extend the due date to Friday, March 26, 2004. Applicant respectfully requests reconsideration of the above-identified application in view of the following remarks.

Please amend the application as follows:

1071112

A-67525/RMA

IN THE CLAIMS:

1.   (Currently amended) A method for collecting connection information for a computer system having a server, at least one device controller coupled to said server by a first communication channel, and a client coupled in communication with said server, said method comprising steps of:

(a)   querying said server to identify all host bus adapters coupled thereto;

(b)   querying each host bus adapter to identify all device controllers attached on said communication channel;

(c)   issuing a <u>SCSI</u> read connection information command to said device controller and returning the connection results identifying [said communication channel] <u>a first WWN of at least one of the host bus adapters and a second WWN of at least one of the device controllers</u>; and

(d)   storing the returned connection results in a data structure.

2.   (Previously amended) The method in Claim 1, wherein said connection results include a host bus adapter identifier corresponding to said server, and at least one device controller identifier corresponding to a device controller coupled to said host bus adapter.

3.   (Original) The method in Claim 1, wherein said data structure comprises a server identification table and at least one host bus adapter connection table associated with a particular host bus adapter.

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4.   (Original) The method in Claim 3, wherein each said server identification table stores at least one server identifier, and each host bus adapter is linked to at least one server table by a pointer and stores at least one device controller identifier.

5.   (Original) The method in Claim 4, wherein said host bus adapter identifier comprises a first WWN and said device controller identifier comprises a second WWN.

6.   (Original) The method in Claim 1, wherein said host bus adapters comprise fibre channel arbitrated loop bus adapters.

7.   (Original) The method in Claim 1, wherein said communication channel comprises a Fiber Channel arbitrated loop channel.

8.   (Original) The method in Claim 1, wherein said device controllers comprise storage device array controllers.

9.   (Original) The method in Claim 1, wherein said device controllers comprise RAID storage array controllers.

10.   (Original) The method in Claim 1, wherein said data structure comprises a host bus adapter connection table.

11.   (Original) The method in Claim 1, wherein said computer system comprises a distributed computer system having a plurality of servers and a plurality of storage subsystems.

12.   (Original) The method in Claim 1, wherein said computer network includes a storage area network (SAN).

13.   (Original) The method in Claim 3, wherein said storage area network includes a RAID.

14.   (Original) The method in Claim 1, wherein said device comprise multiple storage subsystems connected to multiple server systems.

15.   (Original) The method in Claim 12, wherein said method further comprises the step of sending messages using a messaging protocol that permits a storage configuration tool to identify storage subsystems on said storage area network.

16.   (Original) The method in Claim 15, wherein said messaging protocol is substantially independent of the operating system and channel type.

17.   (Original) The method in Claim 1, wherein said host bus adapters comprise Fibre Channel arbitrated loop bus adapters and said read connection information command comprises a Read Fibre Connection Information command.

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18.   (Original) The method in Claim 17, wherein said Read Fibre Connection Information command returns a fibre channel port WWN of a device controller.

19.   (Original) The method in Claim 18, wherein said Read Fibre Connection Information command returns a host bus adapter WWN of a fibre channel host bus adapter to which an array storage device is connected.

20.   (Original) The method in Claim 1 wherein said connection results are returned to said client.

21.   (Original) The method in Claim 1, wherein said connection results identify all connections between a device controller and a server to said client.

22.   (Original) The method in Claim 1, wherein said server comprises an configuration server application software computer program executing on a server computer, and said client comprises a configuration client application software computer program executing on a computer selected from the group consisting of a client computer and said server computer.

23.   (Original) The method in Claim 1, wherein said server computer includes a plurality of host bus adapters and said disk array controller includes a plurality of Fibre Channel Ports, each of these host bus adapters and fibre channel ports being associated with a WWN.

24.   (Original) The method in Claim 22, wherein said configuration server application software computer program allows specific configuration and control commands to be sent by the server computer to the storage array controller from the configuration client.

25.   (Original) The method in Claim 22, wherein said storage array controller comprises a Fibre Channel compliant RAID controller.

26.   (Original) The method in Claim 22, wherein said configuration server application software computer program allows information from said device controller to be sent to the configuration client.

27.   (Original) The method in Claim 1, further comprising performing said steps (a)-(d) for each of a plurality of said servers and for each host bus adapter coupled to each said server.

28.   (Original) The method in Claim 1, wherein at least one of said steps (a)-(d) are performed by said server upon instruction from said configuration client.

29.   (Withdrawn)

30.   (Withdrawn)

31.   (Withdrawn)

32.   (Currently amended) A computer program product for use in conjunction with a computer system having a server, at least one device controller coupled to said server by a first communication channel, and a client coupled in communication with said server, the computer program product comprising a computer readable storage medium and a computer program mechanism embedded therein, the computer program mechanism, comprising:

a program module that directs computer system components to function in a specified manner including collecting connection information for said computer system, the program module including instructions for:

(a)   querying said server to identify all host bus adapters coupled thereto;

(b)   querying each host bus adapter to identify all device controllers attached on said communication channel;

(c)   issuing a <u>SCSI</u> read connection information command to said device controller and returning the connection results identifying [said communication channel] <u>a first WWN of at least one of the host bus adapters and a second WWN of at least one of the device controllers</u>; and

(d)   storing the returned connection results in a data structure.

33.   (Withdrawn)

34.   (Withdrawn)

35.   (Withdrawn)

36.   (Currently Amended) A system for collecting connection information for a network computer system comprising:

a server;

at least one device controller coupled to said server by a first communication channel;

a client coupled in communication with said server;

means querying said server to identify all host bus adapters coupled thereto;

means querying each host bus adapter to identify all device controllers attached on said communication channel;

means issuing a <u>SCSI</u> read connection information command to said device controller and returning the connection results determined by said command including identifying [said communication channel] <u>a first WWN of at least one of the host bus adapters and a second WWN of at least one of the device controllers</u>; and

means storing the returned connection results in a data structure.

37.   (Previously added) The system in Claim 36, wherein said host bus adapters comprise Fibre Channel arbitrated loop bus adapters and said read connection information command comprises a Read Fibre Connection Information command.

38.   (Previously added) The system in Claim 37, wherein said Read Fibre Connection Information command returns a fibre channel port WWN of a device controller.

39.   (Previously added) The system in Claim 38, wherein said Read Fibre Connection Information command returns a host bus adapter WWN of a fibre channel host bus adapter to which an array storage device is connected.

40.   (Previously added) The system in Claim 36, wherein said a read connection information command comprises: instructions for collecting connecting information for components coupled to said server, said components selected from the group consisting of bus adapters, device controllers, and devices coupled to said device controllers; and has a command structure including:

(i) a direct command operation code field identifying the command to be executed; and

(ii) an allocation length field indicating the number of bytes the initiator has allocated for information returned in connection with execution of said command.

41.   (Previously added) The read connection information command in Claim 40, wherein said read connection information command returns connection information selected from the group consisting of an identifier of an initiator issuing the command, an identifier of the controller receiving the command, an identifier of the partner controller, and combinations thereof.

42.   (Previously added) The read connection information command in Claim 40, wherein said identifier of the Initiator issuing the command comprises a WWN of the Initiator issuing the command, said identifier of the controller receiving the command comprises a WWN of the

controller receiving the command, and said identifier of the partner controller comprises a

WWN of the partner controller.

43.   (Previously added) The system in Claim 36, wherein said connection results include a

server identifier, a host bus adapter identifier corresponding to said server, and at least one

device controller identifier corresponding to a device controller coupled to said host bus

adapter.

44.   (Previously added) The system in Claim 36, wherein said data structure comprises a

server identification table and at least one host bus adapter connection table associated with a

particular host bus adapter.

45.   (Previously added) The system in Claim 44, wherein each said server identification

table stores at least one server identifier, and each host bus adapter is linked to at least one

server table by a pointer and stores at least one device controller identifier.

46.   (Previously added) The system in Claim 36, wherein:

said means querying said server to identify all host bus adapters coupled thereto

includes at least a first computer program instruction;

said means querying each host bus adapter to identify all device controllers attached on

said communication channel includes at least a second computer program instruction;

said means issuing a read connection information command to said device controller
and returning the connection results determined by said command including identifying all
devices coupled to said device controller includes at least a third computer program instruction;
and

said means storing the returned connection results in a data structure includes at least a
fourth computer program instruction.

47. (New)   A method for collecting connection information in a system comprising a disk
array controller coupled to a configuration server, the configuration server having a host bus
adapter, the method comprising:

generating a SCSI read fibre connection information command in the configuration
server;

issuing the SCSI read fibre connection information command to the disk array
controller through the host bus adapter; and

receiving a first WWN of the host bus adapter and a second WWN of the disk array
controller responsive to the SCSI read fibre connection information command.

REMARKS

After entry of this amendment, claims 1-28, 32 and 36-46 are pending in the application. By this amendment claims 1, 32, and 36 are being amended. The amendments are fully supported by the specification, drawings and claims as originally filed, no new matter is added, and entry of the amendments is respectfully requested.

In particular, amendments to these claims further specify that the method (claim 1), computer program product (claim 32) and system (claim 36) require: "issuing a *SCSI* read connection information command to said device controller and returning the connection results identifying *a first WWN of at least one of the host bus adapters and a second WWN of at least one of the device controllers*".

Applicant has also added new claim 47 which recites an analogous limitation relative SCSI and WWN's of: "receiving a first WWN of the host bus adapter and a second WWN of the disk array controller responsive to the SCSI read fibre connection information command." Claim 47 also recited similar elements to the elements recited in the previously pending claims so that no additional search or examination should be required beyond that required for the pending previously examined claims.

The Examiner rejected all claims under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,209,023 to Dimitroff et al., (hereinafter DIMITROFF), in view of U.S. Patent No. 6,480,955 to DeKoning et al., (hereinafter DEKONING).

DIMITROFF is directed to a method of virtualizing SCSI semantics onto a non-SCSI transport medium. DIMITROFF provides a Get Logical To Physical Device Mapping command (hereinafter "GET_MAPPING"). (Col. 14 line 64, through Col. 15 line 14). The

GET_MAPPING returns a logical to physical device mapping table. The GET_MAPPING command is used for data for each device including four contiguous bytes called a "device record": one byte represents an FCP LUN value, a second byte represents a SCSI bus, a third byte represents a SCSI target, and a fourth byte represents a SCSI LUN. (Col. 14, lines 2-13).

DEKONING is directed to a system and method for managing device configuration changes. The system and method preferably comprises a management station which issues a configuration change request to a management device and waits for a reply from the managed device. (Abstract)

Certain differences between the claimed invention and the cited art have already been argued in the earlier responses and Applicant maintains these are still accurate differences. Applicant has however further amended the claims in response to the final rejection and hereinafter addresses these additional differences.

As to claim 1:

First, Applicants submit that neither of the cited references alone or in combination teach or suggest "issuing a read connection information command to said device controller and returning the connection results identifying a first WWN of at least one of the host bus adapters and a second WWN of at least one of the device controllers." In contrast, the GET_MAPPING command suggested in DIMITROFF returns a physical device mapping table. DIMITROFF does not identify or return a first WWN of at least one of the host bus adapters and a second WWN of at least one of the device controllers. In contrast to the claimed invention, DIMITROFF returns the mapping information for the associated device as described above.

Thus, Applicants submit that neither of the cited references, alone or in combination, teach or suggest "issuing a read connection information command to said device controller and returning the connection results identifying *"a first WWN of at least one of the host bus adapters and a second WWN of at least one of the device controllers"*.

For at least these reasons, Applicants respectfully request the rejection be withdrawn, and that claim 1, and claims 2-28 which are dependent therefrom, be allowed.

<u>As to claim 32</u>:

Applicants submit that, as noted above for claim 1, neither of the cited references alone or in combination suggest issuing a SCSI read connection information command to said device controller and returning the connection results identifying *a first WWN of at least one of the host bus adapters and a second WWN of at least one of the device controllers."*

Moreover, the Applicants submit that neither reference alone or in combination teach or suggest identifying *a first WWN of at least one of the host bus adapters and a second WWN of at least one of the device controllers*, in response to a "means issuing a SCSI read connection information command", as provided in claim 32. Applicants submit that the section in DIMITROFF cited by the Examiner does not disclose or suggest identifying the communication channel at all. Accordingly, Applicants respectfully request the rejection be withdrawn, and that claim 32 be allowed.

<u>As to claim 36</u>:

Claim 36 is directed to a system for collecting connection information for a network computer system. As amended claim 36 includes the limitations of: means issuing a SCSI read connection information command to said device controller and returning the connection results

determined by said command including identifying *a first WWN of at least one of the host bus adapters and a second WWN of at least one of the device controllers.*

Applicants submit that, as noted above for claim 1, neither of the cited references alone or in combination suggest "identifying *a first WWN of at least one of the host bus adapters and a second WWN of at least one of the device controllers.* In particular, Applicants submit that neither of the cited references alone or in combination teach or suggest a the invention as now claimed. Thus, claim 36 is neither anticipated by nor obviated by the cited references.

Accordingly, Applicants respectfully request the rejection be withdrawn, and that claim 36, and claims 37-46 dependent therefrom, be allowed.

As to Claim 47

Applicant has added claim 47 which includes the distinguishing features (a SCSI command) and (identifying *a first WWN of at least one of the host bus adapters and a second WWN of at least one of the device controllers) and submits that this claim is patentable over the prior art for at least the same reasons as argued for claims 1, 32, and 36. Applicant submits that although an additional claim has been added here the examination of the claim does not substantially burden the examination and clarifies the issues that need be argued on appeal.*

Application. No. 09/466,993
March 25, 2004
Reply to Office Action of November 26, 2003

PROPOSED INFORMAL AMENDMENT

CONCLUSION

Applicant respectfully requests reconsideration of the above-identified application in view of the amendments and preceding remarks. In the event that the Examiner identifies any other issues that would preclude issuing a Notice of Allowance, the courtesy of a telephone call to the undersigned attorney would be appreciated.

The Commissioner is authorized to charge any additional fees, such as fees for extension of time and claims added herein but not otherwise paid for, to Deposit Account No. 50-2319 (Order No. A-67525/RMA(463515-65)).

Respectfully submitted,

By:_____
R. Michael Ananian, Reg. No. 35,050

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